

**DEPARTMENT OF TRANSPORTATION**

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch

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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 13.28**WELDING INSPECTION REPORT****Resident Engineer:**Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-013878**Date Inspected:** 05-May-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 1000**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1830**Contractor:** Oregon Iron Works Clackamas, Or.**Location:** Clackamas, OR

<b>CWI Name:</b>	M. Gregson, J. Salazar, G. Mundt			<b>CWI Present:</b>	<b>Yes</b>	<b>No</b>	
<b>Inspected CWI report:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Rod Oven in Use:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>Electrode to specification:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Weld Procedures Followed:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>Qualified Welders:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Verified Joint Fit-up:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>Approved Drawings:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Approved WPS:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
				<b>Delayed / Cancelled:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>Bridge No:</b>	34-0006			<b>Component:</b>	Hinge K Pipe Beams		

**Summary of Items Observed:**

The Quality Assurance Inspector Sean Vance arrived on site at Oregon Iron Works, Inc (OIW) in Clackamas, OR, to randomly observe the in process welding of the Hinge K Pipe Beam assemblies. The QA Inspector arrived on site to randomly observe the OIW Quality Control (QC) Inspectors in process and completed visual and nondestructive testing. Upon the arrival of the QA Inspector the following observations were made:

**Hinge-K Pipe Beam Assembly 101A-4:**

The QA Inspector observed that the backgouging had been completed on the previous grave yard shift, on the weld Joint #W4-01. The QA Inspector noted that this was the Complete Joint Penetration (AWS D1.5 B-U7-S), 120A-4 Fuse to 102A-4 Forging. The QA Inspector observed that OIW QC Inspector Jose' Salazar was present on this shift and QC Inspector Salazar explained that 100 % Visual and Magnetic Particle Testing had been performed on the completed backgouge. QC Inspector Salazar explained that the testing had been performed by Graveyard QC Inspector Jon Nicholich and that no rejectable indications were found, during the testing. The QA Inspector questioned QC Inspector Salazar if QC Inspector Nickolich had measured the depth of the completed backgouge during the Visual Testing and prior to performing the MT. QC Inspector Salazar explained that he wasn't sure if the backgouge depth was measured and could find no record that QC Inspector Nickolich had performed the measurements. QC Inspector Salazar explained that he will measure the depth of backgouge and inform the QA Inspector of the results. QC Inspector Salazar later explained that he had measured the depth and had recorded 62-63 mm average depth. The QA Inspector noted that the depth of the backgouge is required to be at a minimum of 60 mm, to remove potential discontinuities in the root and grind to sound metal. The QA Inspector then randomly measured the depth of backgouge utilizing a bridge cam gauge and 6" metal ruler and recorded the depth to be at a minimum 60 mm deep. The QA Inspector performed 100 % Visual testing and found no apparent visual

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discontinuities and it appeared that the grinding performed was to clean sound metal. QC Inspector Salazar explained that production pre-heating will soon start the pre-heating on the weld joint and Submerged Arc Welding will begin, once the required minimum 350 degrees Fahrenheit is reached. QC Inspector Salazar explained that he will verify the full saturation of pre-heat, prior to the SAW starting.

The QA Inspector later observed WID #S53 (Jerry Shephard) performing the SAW on the above mentioned weld joint in the flat (1G) position. The QA Inspector observed that the pre-heat was being applied to the joint with the previously set-up two stationary rosebud torches, which were used during the SAW on the interior portion of the weld joint. The QA Inspector randomly verified the temperature, near the source of SAW filler metal which was being deposited and recorded a minimum temperature of 350 degrees Fahrenheit. The QA Inspector randomly observed that the in-process welding parameters were 562 amps and 35.2 volts, which appeared to be in compliance with the applicable WPS 4016. The QA Inspector observed that QC Inspector Salazar was present and Mr. Salazar explained that he was intermittently monitoring the welding parameters and pre-heat during the SAW, at approximately 30 minute intervals. The QA Inspector noted that the SAW being performed, appeared to be in compliance with AWS D1.5 and the applicable WPS. QC Inspector Salazar explained that the SAW will continue throughout the entire shift and will continue on swing.

The QA Inspector was present on this swing shift and observed WID #B10 (Liem Bui) continuing to perform the SAW, on the above mentioned weld joint. The QA Inspector observed that OIW QC Inspector Gary Mundt was present on this shift. QC Inspector Mundt explained that he was intermittently monitoring and recording the welding parameters, during the SAW. QC Inspector Mundt explained that he had recorded average, in-process parameters of 600 amps, 33 volts and a travel speed of 22 inches per minute. QC Inspector Mundt explained that he had recorded pre-heat temperatures of approximately 350 degrees Fahrenheit. The QA Inspector observed that the stationary rosebud torches, which OIW is using to pre-heat the joint, have been consistently applying the pre-heat between shifts and the QA Inspector randomly checked the pre-heat. The pre-heat temperature was approximately 350 degrees Fahrenheit. QC Inspector Mundt explained that WID #B10 will continue the SAW throughout the shift and will probably resume on Graveyard shift. The QA Inspector noted that per the contract requirements, that OIW will have to grind the outside cap flush with the base material, after the SAW is complete. See attached pictures below.

### Hinge-K Pipe Beam Assembly 102A-3:

The QA Inspector observed WID #B62 (Marcus Belgarde), performing the submerged arc welding (SAW) on the a110 Base plate to b106 HPS 485W stiffener. The QA Inspector noted that this weld joint was designated as a partial joint penetration (AWS D1.5 TC-P4-S), weld joint #W2-17 and WID #B62 was performing the SAW in the flat (1G) position. The QA Inspector noted that the SAW fill passes were currently in-process and that the OIW approved welding procedure specification (WPS 4020), was being utilized. The QA Inspector observed that QC Inspector Jose´ Salazar, was present and QC Inspector Salazar explained that the in-process welding parameters/pre-heat temperatures, were intermittently verified. QC Inspector Salazar explained that the average welding parameters for the SAW fill passes were recorded at 563 amps/34 volts, with a pre-heat of approximately 350 degrees Fahrenheit (177 C) and travel speed of 18 inches per minute (i.p.m). The QA Inspector randomly verified pre-heat of approximately 350 degrees Fahrenheit (177 C) and welding parameters to be in compliance with the applicable WPS 4020.

The QA Inspector later observed that OIW had completed the SAW on the above mentioned weld joint and had removed the assembly and placed on the Bay 3 shop floor. The QA Inspector observed that OIW had removed the 2 attached rigging clamps and had placed them on the opposite side, in preparation for the SAW on the partial penetration weld joints #W2-01 and #W2-02.

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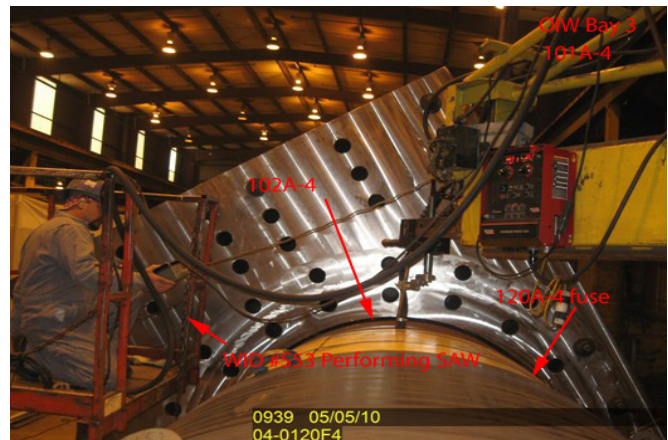
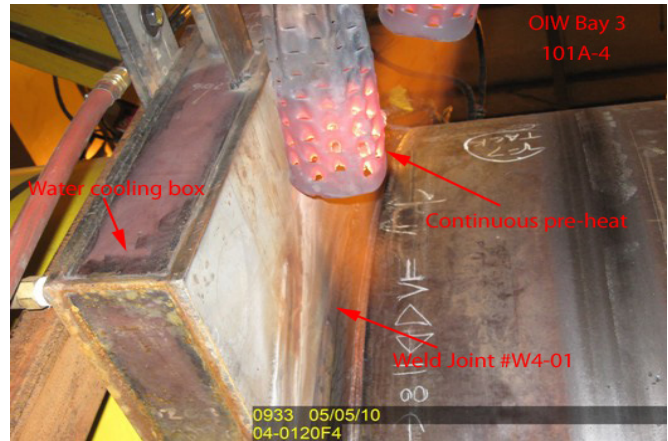
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The QA Inspector was present on this swing shift and observed that no work was performed, on this assembly and was sitting idle on the shop floor.

### Material, Equipment, and Labor Tracking (MELT)

QA Inspector Sean Vance performed a verification of material, personnel and equipment involved with the project.

The QA Inspector observed at Oregon Iron Works: 4 OIW production personnel and 2 QC Inspectors.



### Summary of Conversations:

As noted above.

### Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mohammad Fatemi (916) 813-3677, who represents the Office of Structural Materials for your project.

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**Inspected By:** Vance,Sean

Quality Assurance Inspector

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**Reviewed By:** Adame,Joe

QA Reviewer